Are Computer-based Educational Materials Recognized as Publications?
An Analysis of Promotion Documents at American Medical Colleges

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A generalized perception exists that faculty will not be properly rewarded for efforts in developing computer-based educational materials. Faculty governed by traditional promotion and tenure systems thus may be reluctant to devote energies towards development of these materials. Recent national panels on educational reform have called for a reexamination of academic reward structures to insure that faculty receive appropriate scholarly recognition for materials developed in these new formats. A study of policy documents from accredited medical colleges in the United States was conducted to determine the extent to which academic health science institutions have adopted policies to grant recognition of computer-based materials equivalent to that accorded traditional print publications. Results revealed that while some progress has been made by leading-edge institutions, in three-quarters of the institutions, development of computer-based educational materials is considered evidence in support of teaching, not the more highly rewarded research or scholarly activity.

INTRODUCTION

The value of CAI materials has been widely acknowledged. Two decades of research have found, however, that faculty generally are not rewarded for instructional improvement projects [2, 3, 8, 10]. These studies also have found that when colleges make commitments to increase faculty involvement in institutional projects, they make no formal provisions to reward faculty for those initiatives. A recent national study of family medicine departments confirms the perception that traditional "bench" research has predominant importance in the promotion and tenure process [7].

A multitude of educational programs are discussed annually at the SCAMC meeting. This demonstrates that the inertia which has been characterized as existing towards CAI implementation has been surmounted by a substantial number of faculty. Still, faculty governed by a tradition bound system are frequently caught between the calls from national panels for educational reform and an organizational and social structure in their schools that does not support (or gives lip service to) the reform movement. Even those charged with the responsibility for the design, development, and use of computer-based materials admit that in the current organizational climate, the results of time invested on educational computing run counter to the research paradigm for tenure and promotion [5]. Manuals designed to guide career development advise faculty to select academic positions at institutions whose goals and reward structures are aligned with their interests [4]. In a January 1992 report, Evaluation and Recognition of Teaching, Cornell University directly confronts the disparity [9]. Its recommendations state that: 1) teaching and research be treated and rewarded on an equal basis and 2) rewards be developed and policies designed for excellence in teaching and for significant instructional development. Wide-spread efforts encouraging faculty to develop multi-media educational materials will be met with limited success as long as organizational policies remain focused on traditional print publications in the promotion process, the standard measure of faculty achievement throughout academe.

METHODOLOGY

To test the commonly held perception that computer-based materials will not be considered equally with traditional scholarly publications in the promotion process, the author sent a letter to the Dean of all accredited U.S. medical colleges requesting published promotion and tenure documents and guidelines. To avoid bias based on differences in governance structures, the 16 Canadian members of the AAMC were not surveyed. Since tenure for faculty raises many separate issues, the study specifically focused on guidelines and criteria for promotion, not tenure.

The analysis of promotion documents specifically focused on criteria listed for promotion from the rank of Assistant Professor to Associate Professor. Faculty have a strong incentive to publish,

particularly at the assistant professor level, as there is an increased probability of promotion to the associate professor level associated with article publication. "Publication appears to have a greater effect on the probability of promotion to associate than full professor, reflecting the existence of other productivity criteria at the terminal rank." [10, p.17]

Using the techniques of document analysis, documents were read and categorized by the domain — research, scholarship, or teaching — in which faculty could be recognized for the development of computer-based materials. More specifically, the analysis sought to determine if these materials are considered evidence of research or scholarly contributions to the academic community and would receive recognition similar to that given other traditional scholarly publications. In addition, the analysis examined specific criteria applied by promotion committees to evaluate computer-based materials.

RESPONSE RATE

A total of 106 (84%) of the 126 AAMC member institutions responded to the request for documents describing the institution's promotion and tenure policies. Three institutions, two public and one private, formally declined to participate in the study. As seen in table 1, the number of usable responses (103) represents 82% of the total number of medical colleges in the United States.

Table 1. Institutional Response Rate

	Private	Public	Total
Medical Colleges	52 (100%)	74 (100%)	126 (100%)
Responses	44 (85%)	62 (84%)	106 (84%)
Non-respondents	8 (15%)	12 (16%)	20 (16%)
Study Participants	43 (83%)	60 (81%)	103 (82%)

STUDY RESULTS

With a usable response rate of 82%, 103 sets of documents were examined to determine how computer-based materials are recognized, based on stated policy, in the evaluation of faculty for promotion. The documents from ten institutions were so vaguely written that they could not be

categorized according to the schema developed for this study. Ninety three documents were categorized into four groups based on the domain in which faculty would receive recognition for the development of computer-based instructional materials. The intent of the study was not to examine the trend in academic institutions to develop parallel tracks (which may or may not be eligible for tenure) for clinical faculty. The study did, however, identify separately those institutions which appeared to grant scholarly recognition to faculty in limited service tracks who develop non-traditional materials, while not granting faculty in regular service tracks recognition of these materials as evidence of academic productivity and scholarship. Table 2 shows the results of the document analysis by domain.

Table 2. Domain in which Computer-based Materials are Recognized

	Private	Public	Total
Research	2	7	9 (9%)
Scholarship	0	7	7 (7%)
Teaching	29	37	66 (64%)
Qualified	7	4	11 (11%)
Undefined	5	5	10 (10%)
Total	43	60	103

The results of this classification reveal:

- 16% of the institutions have adopted promotion guidelines under which faculty could receive scholarly recognition for computer-based educational materials as evidence of research productivity and scholarship.

- 11% of the institutions grant scholarly recognition for CAI materials to clinical-educators, but not faculty in undifferentiated tracks.

- 64% of the institutions consider faculty developed computer-based materials evidence of contributions to teaching. With faculty in undifferentiated tracks considered, the total percentage of institutions which grant teaching recognition for computer-based educational materials increases to 75%.

• 10% of the institutions publish guidelines which are sweeping in generalizations regarding academic excellence and provide no cues regarding specific criteria on which faculty will be evaluated.

Since scholarship is a term used by institutions to denote the highest levels of excellence expected of faculty and in essence equates such recognition with that given research in those institutions, the scholarship and research categories were combined to execute a chi square analysis of promotion documents by the domain in which computer-based materials are recognized. The resulting chi square analysis (df=3) had a probability of 0.04195, indicating that there appears to be a relationship between the favored domain and the type of institutional governance. Faculty in public institutions appear to be more likely to receive recognition for computer-based materials as evidence of their research and scholarly productivity.

Examples culled from the documents demonstrate the inconsistency between written goals for research or scholarship and the types of activities for which faculty are assured full recognition. Some institutions appear to have rewritten the preamble to promotion and tenure policies to broaden the definition given to scholarship, but exclusively list examples of traditional types of print materials (e.g. journal articles, case study reports, book chapters, and monographs) as examples of the materials which will be considered by the evaluation committee considering promotion recommendations. As seen in information provided by a number of deans who participated in the study, a select number of institutional promotion committees have demonstrated their intent to reward faculty for non-traditional endeavors. In these institutions, evaluators have used the flexibility afforded them in the institution's policies and made the appropriate case to use computer-based publications rather than the traditional type of print publications in their recommendation for promotion.

The dichotomy in recognition is apparent in the number of schools that have liberalized promotion policies to include recognition for teaching and the development of computer-based materials, but only for faculty in qualified service tracks, generally those titled clinician or clinician-educator. In these institutions there appears to be no change for faculty in regular, undifferentiated tracks whose contributions are still measured by the traditional print publication. In three-quarters of the

institutions, computer-based materials developed by faculty in regular tracks will be considered only as evidence of a contribution to teaching. Historically, teaching is a secondary consideration and given lower priority in the evaluation for promotion. Despite some formal changes in promotion policies, nothing has really changed for faculty in the basic sciences. Many studies and public pronouncements by academic leaders have called for widespread use of computers in medical education. The study found, however, that only limited progress has been made by academic institutions in adopting promotion policies which serve to encourage CAI development by faculty.

Language

Within each domain the documents were analyzed to isolate the precise language used to identify computer-based and other educational materials. Language in the documents was categorized according to a five level schema based on specificity. A summary table representing the descriptive language employed by institutions in their promotion documents across all domains is presented in Table 3.

Table 3. Language Identifying Educational Media

	Private	Public	Total
CAI/Electronic Media	5 (13%)	16 (29%)	21 (23%)
AV Materials	3 (8%)	2 (4%)	5 (5%)
Educational Innovation	5 (13%)	9 (16%)	14 (15%)
Curriculum Development	11 (29%)	13 (24%)	24 (26%)
Non-specific	14 (37%)	15 (27%)	29 (31%)
Total	38 (100%)	55 (100%)	93 (100%)

While faculty are encouraged to participate in curriculum development and develop methodologies for educational innovation, only a little more than a fifth [23%] of the institutions have specifically incorporated the concept of computer-based educational materials in their promotion documents. With a frequency slightly higher than 2:1, this table points to the higher level of formal recognition

afforded computer-based materials in public than private institutions. It is interesting to note from the frequencies shown that computer-based materials appear to have captured a level of formal recognition not achieved by their predecessors in the non-traditional format, audiovisual media like slide sets, films and video.

Evaluation

In addition to the analysis of descriptive language in the promotion guidelines, the study looked for additional criteria cited in promotion guidelines which would add weight or credence to the favorable recognition of computer-based materials in the evaluation process. Table 4 summarizes these factors, independent of the domain in which faculty would receive recognition for the development of computer-based materials.

Table 4. Criteria Significant in Media Evaluation

	Private	Public	Total
Evaluated favorably by national peers	1	9	10
Publish/Distributed nationally	2	3	5
Adopted by another institution	1	2	3
Well documented	1	2	3
Evaluated favorably by students	0	1	1
Published in Scientific Journals	0	1	1

It is clearly evident by its frequency that peer review is a vital criterion in the acceptance of computer-based educational programs as equal to other scholarly works. Institutional guidelines favor and grant greater recognition to computer-based materials which have been evaluated by a national panel of experts than an internal review body. The importance of an external focus for programs is further evidenced in evaluation criteria which focus on the national distribution of programs or the adoption of programs at other academic institutions.

The importance of external validation is emphasized by the requirement in almost half the institutions [10 of 21] that materials be favorably reviewed by

national peers. One major obstacle to the acceptance of CAI often cited in the literature is the inability to judge the quality of materials developed.

DISCUSSION

The ACME-TRI report, published in 1992 by the Association of American Medical Colleges, lists amongst its strategies the need for a program to assist faculty members in developing and sharing educational materials. It suggests that "an AAMC-sponsored consortium for sharing and documenting the use of educational materials developed at individual schools should be established" [1, p. 14]. The results of this study indicate that medical schools would be supportive of a consortium, particularly to provide unbiased external review of computer-based materials.

The results of this study also point out the need to disseminate more broadly existing evaluation models in order to promote proper evaluation and peer review of CAI programs. One excellent model for the evaluation of computer-based materials is the guidelines developed by the Medical College of Virginia. Faculty are assured their self-instructional packages will be considered on an equal basis with research publications in the promotion and tenure process provided they conform to the established criteria. The MCV Self-Instructional Packages Policy and Procedures provide explicit definitions of what constitutes a self-instructional package, procedures for package preparation (including peer review and revision protocols), and dissemination (utilization on a continuing basis in the curriculum at that institution or elsewhere). Carol L. Hampton, Associate Professor, Medical Education and Allied Health Education at the Medical College of Virginia, who worked with the Associate Dean for Curriculum in the design and implementation of this policy, indicated the goal was "to parallel the peer review system which is the norm for journal article acceptance" [6]. This model, in place since 1975, closely approximates elements of the peer-review process for traditional publications and might be readily translated to other institutional environments.

So where does that leave faculty-developers and those of us in the educational community striving to promote the development and effective utilization of computer-based materials? Faculty concerned about promotion who want to develop computer-based educational materials need to become more aware of the institutional climate. Faculty who

consider embarking on CAI development projects must determine if the local academic environment is receptive and will reward these initiatives. Since three-quarters of the institutions consider computer-based materials developed by faculty in regular service tracks to be evidence of teaching contributions, efforts to affect institutional promotion policies may need to be strategically realigned. Efforts to grant computer-based materials recognition equivalent to research publications face tough sledding in tradition-bound, research-intensive institutions. Therefore, proponents of CAI may need to focus reform efforts on increasing the emphasis placed on teaching in the promotion process. Even when policies have been revised, actual reform does not necessarily occur in practice. Real educational reform has been achieved when those charged with interpreting and implementing policies demonstrate by their actions changed attitudes and behaviors. Until reports of successful implementation are confirmed, promotion guidelines adopted in response to the call for curricular innovation remain dormant. We, the proponents of computer-based education, need to focus our attention on institutional policies as much as the technology we endorse.

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